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WORKING PAPER NO. 58

DETROIT RESERVOIR WATER QUALITY DATA REPORT
June 1965--December 1965

DISTRIBUTION

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Reviewed by RJC

Approved by JLA

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Federal Water Pollution Control Administration
Pacific Northwest

570 Pittock Block
Portland, Oregon 97205

January 1966

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DETROIT RESERVOIR WATER QUALITY DATA REPORT
June 1965 - December 1965

Columbia River Basin Comprehensive Project
for Water Supply and Pollution Control

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Federal Water Pollution Control Administration, Pacific Northwest

570 Pittock Block
Portland, Oregon 97205

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DETROIT RESERVOIR
WATER QUALITY DATA REPORT
JUNE 1965--DECEMBER 1965

I. Introduction

A cooperative water quality study between the Federal Water Pollution Control Administration and the U. S. Army Corps of Engineers was initiated in June 1964. The surveys, conducted on a monthly schedule, were aimed at determining any significant changes in water quality attributed to the effects of storage or the seasonal variance of reservoir operations.

This report contains a description of methods and procedures employed and the raw data collected. Because field investigations are still continuing, no attempt has been made to analyze data to date. A data report for June 1964--May 1965 precedes this report.

II. Field Procedure

A. Stations

Present sampling stations (shown in Table 1) are pinpointed by use of a depth indicator and established station identification markers.

Stations 1-7 are sampled from a boat and stations 8-10 are taken from shore.

During late fall and winter, the reservoir drawdown prevents access to boat launching facilities. Only shore samples (stations 8-10) are taken during this period.

B. Sampling

All sampling on the reservoir is done from a FWPCA boat.

Once on station, a vertical temperature profile was obtained by lowering a (450') bathythermograph to the bottom. The thermocline position together with conductivity readings recorded from a Whitney conductivity - temperature probe determined the depths for collection of chemical samples.

Water samples for chemical analysis were taken by a series of three-liter Van Dorn bottles placed in tandem on a hydrographic wire. Two-quart polyethylene bottles are filled with sample, then frozen on dry ice until time of analysis at the Portland laboratory.

Dissolved oxygen samples were drawn off of the Van Dorn samplers, then dosed and prepared for titration upon completion of the day's sampling.

pH was determined in the field by using a Hellige Model 600-CA color comparitor, or later determined in the laboratory by the use of a Beckman Model-G pH meter.

Light penetration as percent of light remaining was obtained by using a Whitney deck-sea cell, readings being recorded every two feet.

III. Laboratory Procedures

On the run conducted in July and all previous surveys, the chemical analyses were performed in the field using a Hach Model DR-EL field laboratory.

The following analytical methods were used at the Portland laboratory:

Ortho Phosphate--The Stannous chloride method as described in "Standard Methods." 1/

1/ STANDARD METHODS FOR THE EXAMINATION OF WASTE WATER, 11th Edition, APHC, AWWA, WPCF, published by American Public Health Association.

Total Phosphate--The method for total and polyphosphate as described in "Standard Methods." Beginning with the 10-21 samples, a new method was used in the detection of total phosphate. The method, published by Menzel and Corwin (LIMNOLOGY AND OCEANOGRAPHY, Vol. 10, No. 2, April 1965) has superior detection limits and is soon to be accepted in all FWPCA laboratories as routine analytical procedure.

Nitrate--The phenoldisulfonic acid method as found in "Standard Methods."

On all the above determinations, the photometric results were obtained through the use of a Beckman Model-DB spectrophotometer. The readings were made with 1 cm optical cells.

IV. Data Presentation

The data is arranged by each survey with the first survey (6-17-65) in front and proceeding through each survey in sequence. The station data (within each survey section) is arranged by station, starting from the station nearest the dam (1) and working upstream.

The data headings are explained as follows:

Station--Identified as to location, range, etc.

Date--Month, day, year station was occupied.

Time--The local time messenger was released on the most significant cast.

Depth--Descent from surface (in feet) at which sample was obtained.

Temperature--Temperature in ^{o}F recorded from bathythermograph slide.

Conductivity--Specific conductance in micromhos per centimeter.

pH--The logarithm of the reciprocal of the hydrogen ion concentration in moles per liter.

DO--Concentration of dissolved oxygen milligrams per liter of water.

DO/% Saturation--Ratio of the amount of oxygen dissolved in the sample, compared to the amount of oxygen necessary to saturate a sample of the same water, as per calculations made by Whipple and Whipple.

TABLE 1
DETROIT RESERVOIR SAMPLING STATIONS
U. S. Public Health Service

Sta. No.	Location	
1	Corps of Engineers Sedimentation Range D	Log Boom
2	Corps of Engineers Sedimentation Range G	Above Kinney Creek
3	Corps of Engineers Sedimentation Range J	Above Blowout Creek
4	Corps of Engineers Sedimentation Range L	South Channel side off West end Piety Knob
5	Corps of Engineers Sedimentation Range L	North Channel side off West Piety Knob
6	Corps of Engineers Sedimentation Range P	Beginning of pool backup on Breitenbush River
7	Corps of Engineers Sedimentation Range W	Beginning of pool backup on North Santiam River
8	U. S. Geological Survey Gaging Station	Upstream approximately 4 miles on Breitenbush River
9	Idahna Bridge	Upstream on North Santiam River at Idahna Bridge
10	Tailrace	Taken off concrete approach near powerhouse

All sampling points located at midchannel of station.

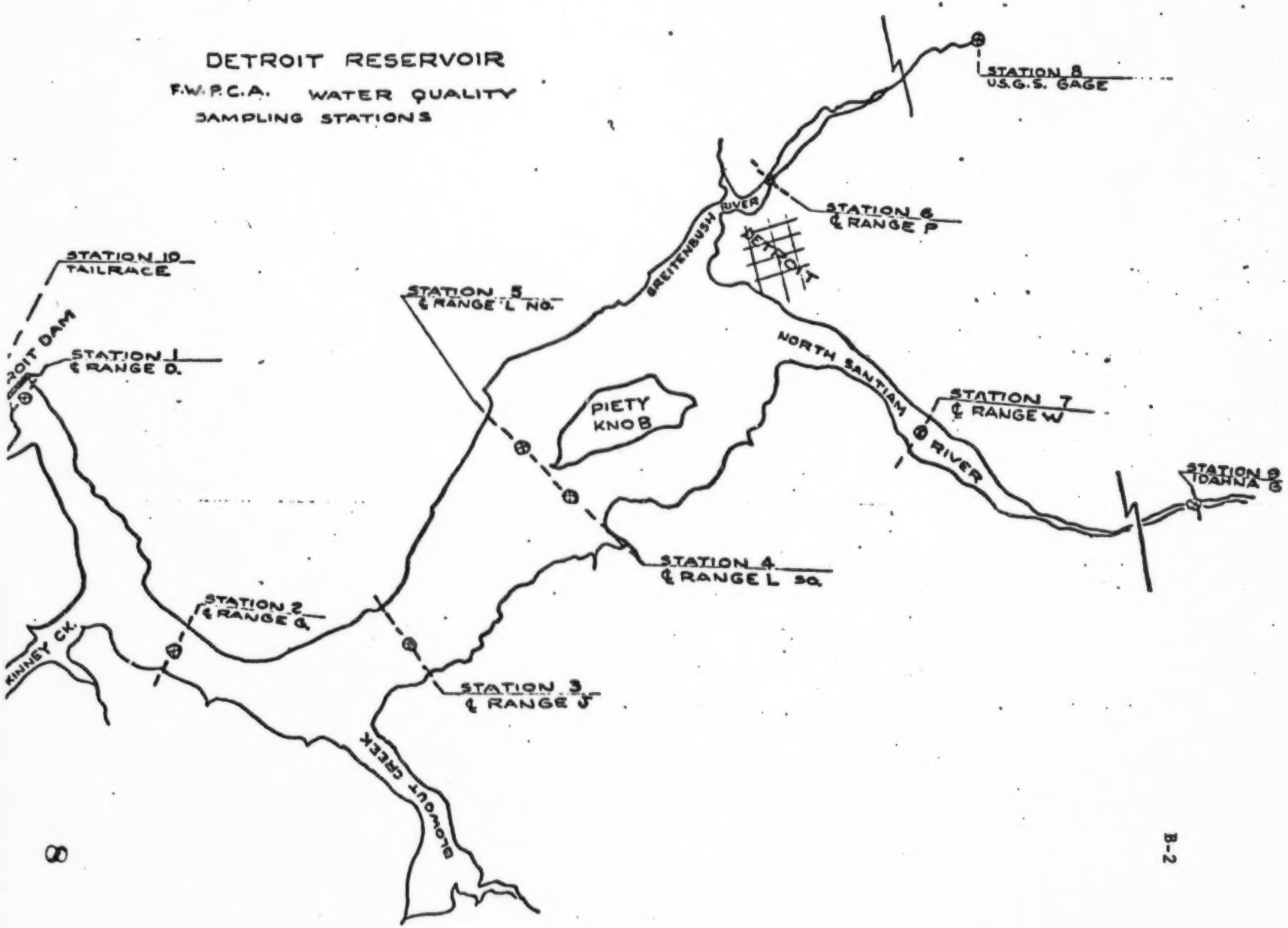
DETROIT RESERVOIR WATER QUALITY DATA REPORT
June 17-18, 1965

Columbia River Basin Comprehensive Project
for Water Supply and Pollution Control

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Federal Water Pollution Control Administration, Pacific Northwest

570 Pittock Block
Portland, Oregon 97205

November 1965


DETROIT RESERVOIR
F.W.P.C.A. WATER QUALITY
SAMPLING STATIONS
STATION 8
U.S.G.S. GAGE
STATION 6
℄ RANGE P
BREITENBUSH RIVER
DETROIT
STATION 10
TAILRACE
STATION 5
℄ RANGE L NO.
DETROIT DAM
STATION 1
℄ RANGE O.
PIETY KNOB
NORTH SANTIAM RIVER
STATION 7
℄ RANGE W
STATION 9
IDAHNA G
STATION 4
℄ RANGE L SO.
STATION 2
℄ RANGE Q
KINNEY CK.
STATION 3
℄ RANGE J
BLOWOUT CREEK

TABULATED DATA
DETROIT RESERVOIR, OREGON
June 17-18, 1965

STATION 1. Log boom: Corps of Engineers Range D.
Time: 1200
Date: June 17, 1965

Weather: Rain
Wind: Calm

Depth Ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Alkalinity Total	Total Hardness	Phosphate Ortho
2	55.6	24						
5	55.4	24	9.94	99	6.9	16	10	Nil
75	52.2	22	10.44	100	6.9	19	21	0.04
150	44.2	20	11.08	96	6.8	16	14	0.06
250	41.7	19	11.08	93	6.6	16	20	0.10
320	41.0	18	7.46	61	6.2	19	24	0.60

STATION 2. Above Kinney Creek: Corps of Engineers Range G.
Time: 1300
Date: June 17, 1965

Weather: Cloudy
Wind: Calm

Depth Ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Alkalinity Total	Total Hardness	Phosphate Ortho
2	57.0	25						
5	57.0	25	10.46	107	6.8	18	24	0.10
50	53.2	24	9.80	101	6.7	16	12	0.10
100	50.0	22	11.10	108	6.7	18	20	0.08
200	44.2	20	11.02	95	6.3	16	16	0.20
300	42.3	20	10.42	88	6.4	16	10	0.18

STATION 3. Above Blowout Creek; Corps of Engineers Range J.
Time: 1350 Weather: Cloudy
Date: June 17, 1965 Wind: S-15

Depth Ft	Temp. °F	Cond. Umho/cm	D.O. mg/1	D.O. % Sat.	pH	Alkalinity Total	Total Hardness	Phosphate Ortho
2	59.0	27						
5	58.6	27	9.72	110	6.9	14	12	0.10
50	55.0	25	8.04	88	6.8	14	11	0.12
100	48.6	22	10.28	106	7.6	30	10	0.16
170	44.8	21	9.24	80	6.7	16	12	0.20
230	42.6	20	10.20	88	6.6	16	18	0.12

STATION 4. South Channel off west end Piety Knob; C of E Range L
Time: 0910 Weather: Cloudy
Date: June 18, 1965 Wind: S-10

Depth Ft.	Temp. °F	Cond. umho/cm	D.O. mg/1	D.O. % Sat.	pH	Alkalinity Total	Total Hardness	Phosphate Ortho
2	58.5	26	9.60	99	6.8	20	16	0.10
5	58.5	26						
50	54.7	26	10.08	99	6.7	18	14	0.12
75	51.6	25						
100	48.2	22	10.70	97	6.7	18	14	0.08
150	45.7	21	10.68	94	6.6	20	14	0.06

STATION 5. North Channel off west end Piety Knob; C of E Range L
Time: 0930
Date: June 18, 1965
Weather: Cloudy
Wind: S-15

Depth Ft.	Temp. °F	Cond. umho/cm	D.O. mg/1	D.O. % Sat.	pH	Alkalinity Total	Total Hardness	Phosphate Ortho
2	58.6	25	9.66	99	6.8	16	12	0.04
10	58.6	25						
50	55.4	24	9.90	98	6.6	18	10	0.08
75	51.1	24						
100	47.6	22	10.50	103	6.7	16	20	0.10
150	45.3	21						
160	44.6	21	10.78	93	6.0	12	30	0.16

STATION 6. Beginning of Pool backup on Breitenbush River; C of E Range P
Time: 1000
Date: June 18, 1965
Weather: Cloudy
Wind: Calm

Depth Ft.	Temp. °F	Cond. umho/cm	D.O. mg/1	D.O. % Sat.	pH	Alkalinity Total	Total Hardness	Phosphate Ortho
2	61.0	27						
5	61.0	27	9.50	101	6.7	16	22	0.10
10	61.0	27						
20	58.6	27	9.62	99	6.7	12	16	0.06
30	58.1	27	9.90	101	6.7	16	20	0.02

STATION 7. Beginning of Pool backup on North Santiam River; C of E Range W
Time: 0820 Weather: Cloudy
Date: June 18, 1965 Wind: Calm

Depth Ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Alkalinity Total	Total Hardness	Phosphate Ortho
2	51.3	28						
5	51.3	28	9.90	93	6.8	18	12	0.08
10	51.4	27						
20	49.8	27	10.30	96	6.8	14	16	0.08
30	49.1	27	9.89	91	6.8	16	16	0.06

STATION 8. U.S.G.S. Gage; - 2 miles up Breitenbush River
Time: 1600 Weather: Cloudy
Date: June 17, 1965 Wind: Calm

Depth Ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Alkalinity Total	Total Hardness	Phosphate Ortho
2	50.0		10.58	99	6.9	14	10	0.22

STATION 9. Idahra Bridge; 5 miles up North Santiam River
Time: 1510
Date: June 17, 1965

Weather: Cloudy
Wind: Calm

Depth Ft.	Temp. °F	Cond. umho/cm	D.O. mg/1	D.O. % Sat.	pH	Alkalinity Total	Total Hardness	Phosphate Ortho
2	50.0		11.35	106	6.9	14	16	0.16

STATION 10. Detroit Dam Tailrace
Time: 0950
Date: June 17, 1965

Weather: Rain
Wind: Calm

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/1	D.O. % Sat.	pH	Total Alkalinity	Total Hardness	Phosphate Ortho
2	46.4		11.20	99	6.8	14	26	0.04

NPD Form July 1959 14

Hydrologic Data

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Page

Project DETROIT RESERVOIR

Comp.

Subject BT SOUNDINGS 6/17-18/59

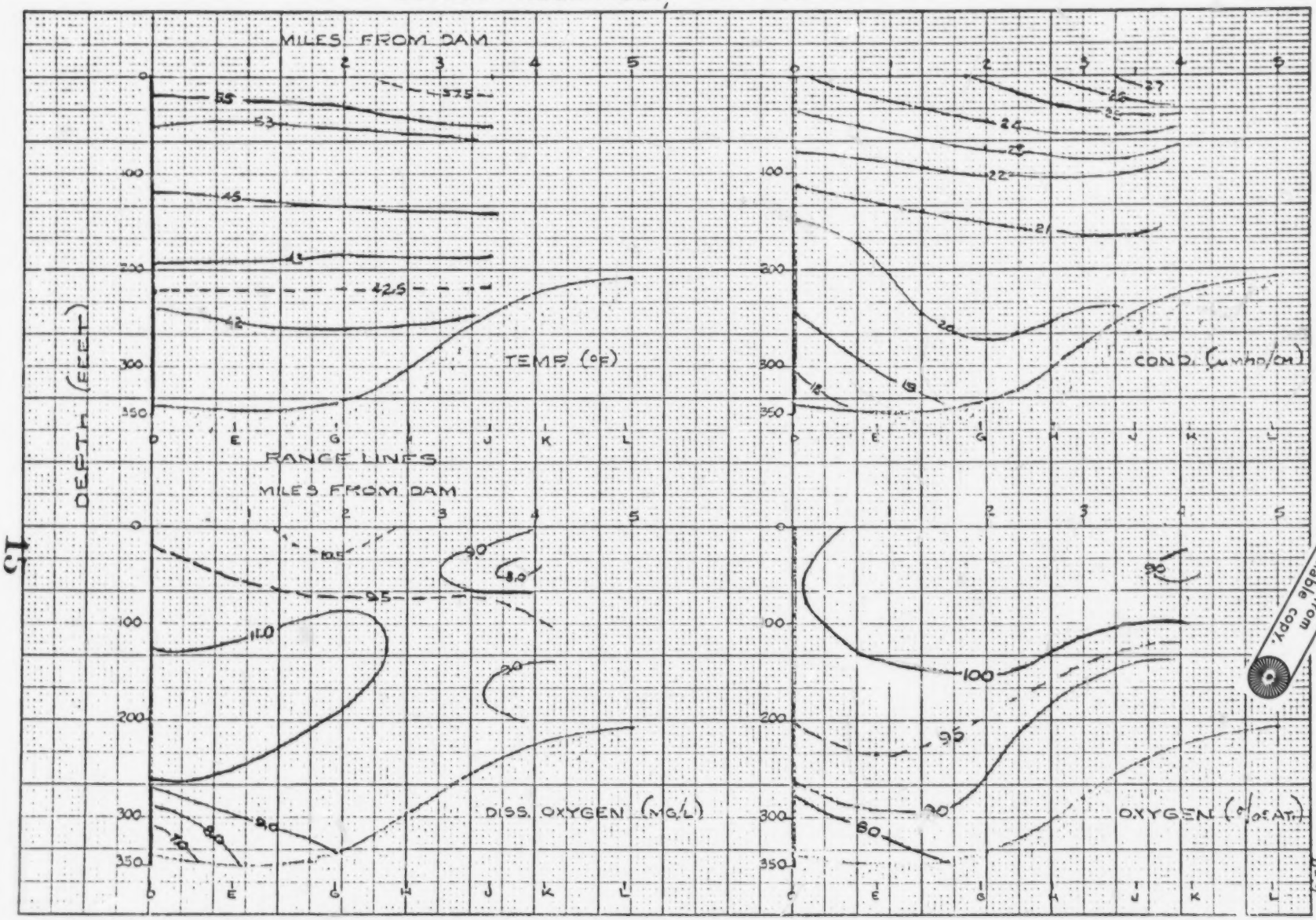
Chkd.

Date:

LOCATION	LOG BOOM	RANGE G	RANGE J	RANGE L SOUTH	RANGE L NORTH					
TIME	1200	1300	1350	0910	0930					
AIR TEMP	55° F	55	57	52	53					
DEPTH ↓										
0	55.6	56.2	59.4	58.2	58.1					
10	55.4	56.2	57.8	58.2	58.1					
20	55.0	56.2	57.0	58.2	58.1					
30	54.6	55.4	56.6	58.1	57.8					
40	53.6	53.8	56.2	56.8	56.0					
50	52.8	53.0	55.0	53.4	54.2					
60	51.6	52.0	52.4	51.8	52.6					
70	50.6	51.0	50.2	50.2	50.8					
80	49.2	49.4	49.6	49.0	49.8					
90	48.0	47.6	48.2	47.6	47.2					
100	46.8	46.8	47.8	47.0	46.2					
110	46.2	46.2	46.8	46.4	45.8					
120	45.0	45.6	46.0	46.0	45.2					
130	44.6	45.0	45.4	45.2	45.0					
140	44.2	44.4	45.0	44.4	44.4					
150	43.8	43.8	44.4	44.0	44.2					
160	43.6	43.6	44.2	43.2	43.8					
180	43.2	43.0	43.2	160 BOTTOM	43.2					
200	42.6	42.6	42.6		190' BOTTOM					
210	42.4	42.4	42.4							
220	42.2	42.2	42.2							
240	42.0	42.1	42.2							
260	41.6	42.0	258 BOTTOM							
280	41.4	41.8								
300	41.2	41.6								
320	41.2	41.2								
340	41.2	325' BOTTOM								
	345' BOTTOM									
					14					

K•E 7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

DETROIT RESERVOIR 6-18-65



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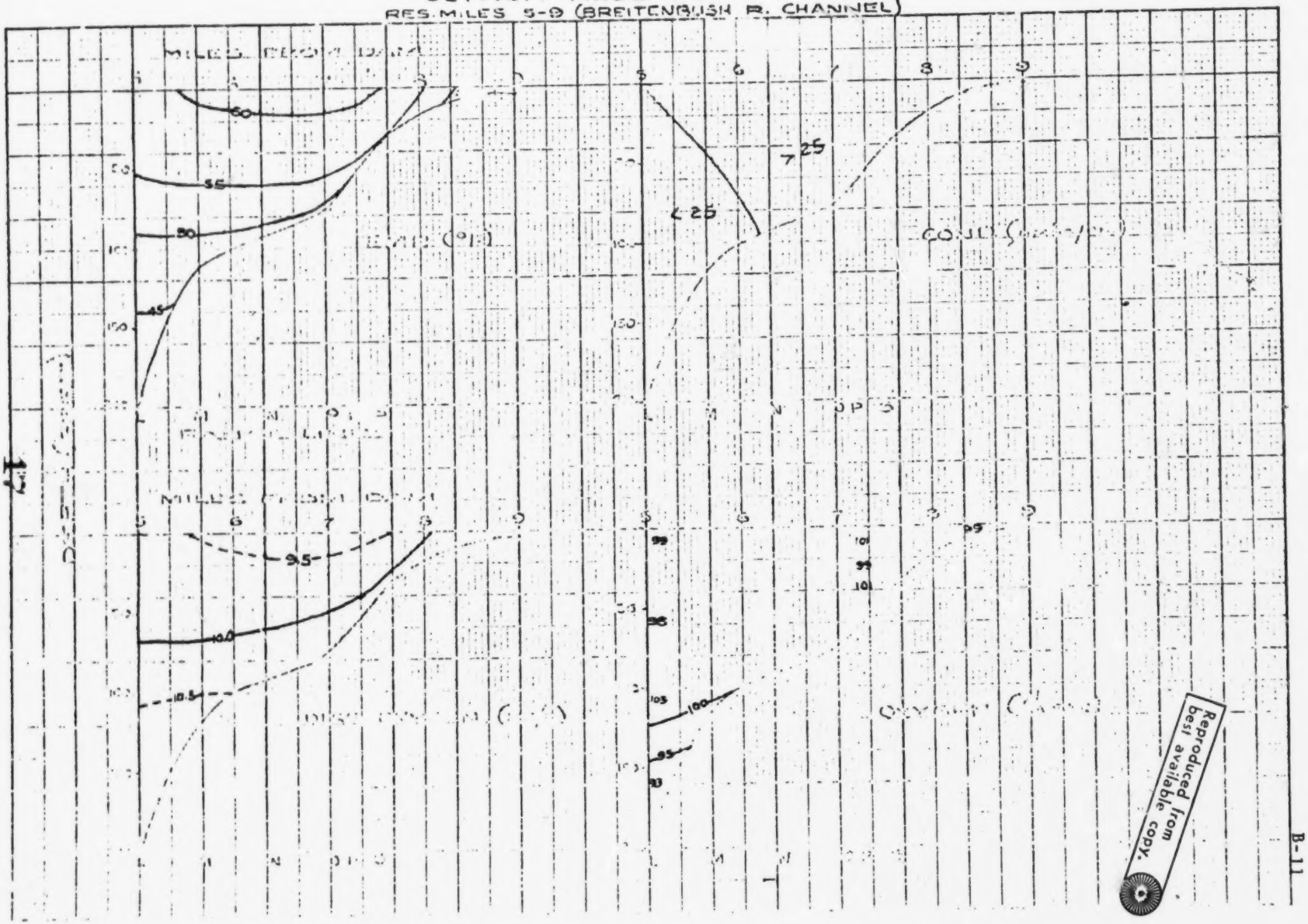
KEUFFEL & ESSER CO.

DETROIT RESERVOIR

RES. MILES 5-9 (BREITENBUSH R. CHANNEL)



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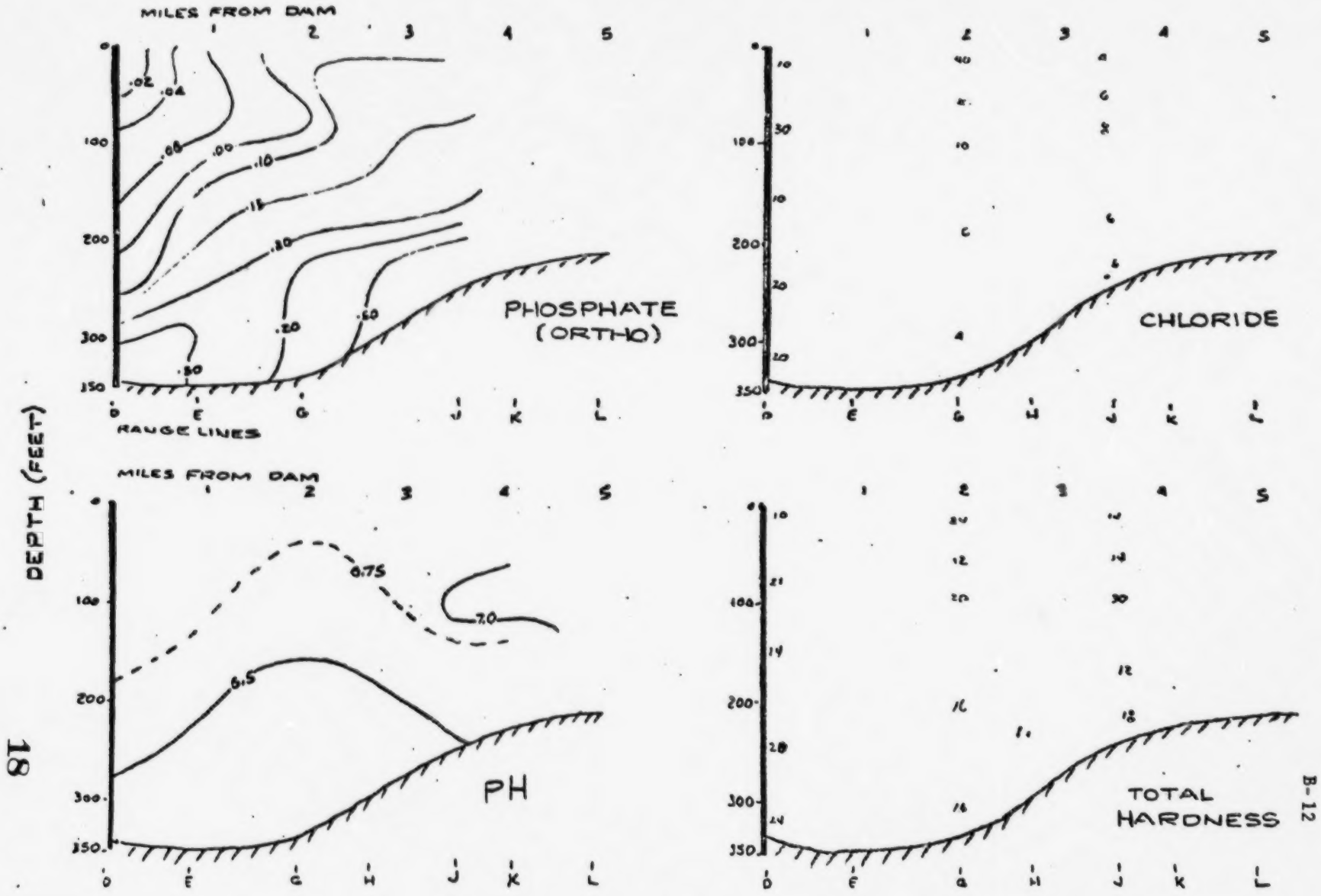
DETROIT RESERVOIR 6-17-65



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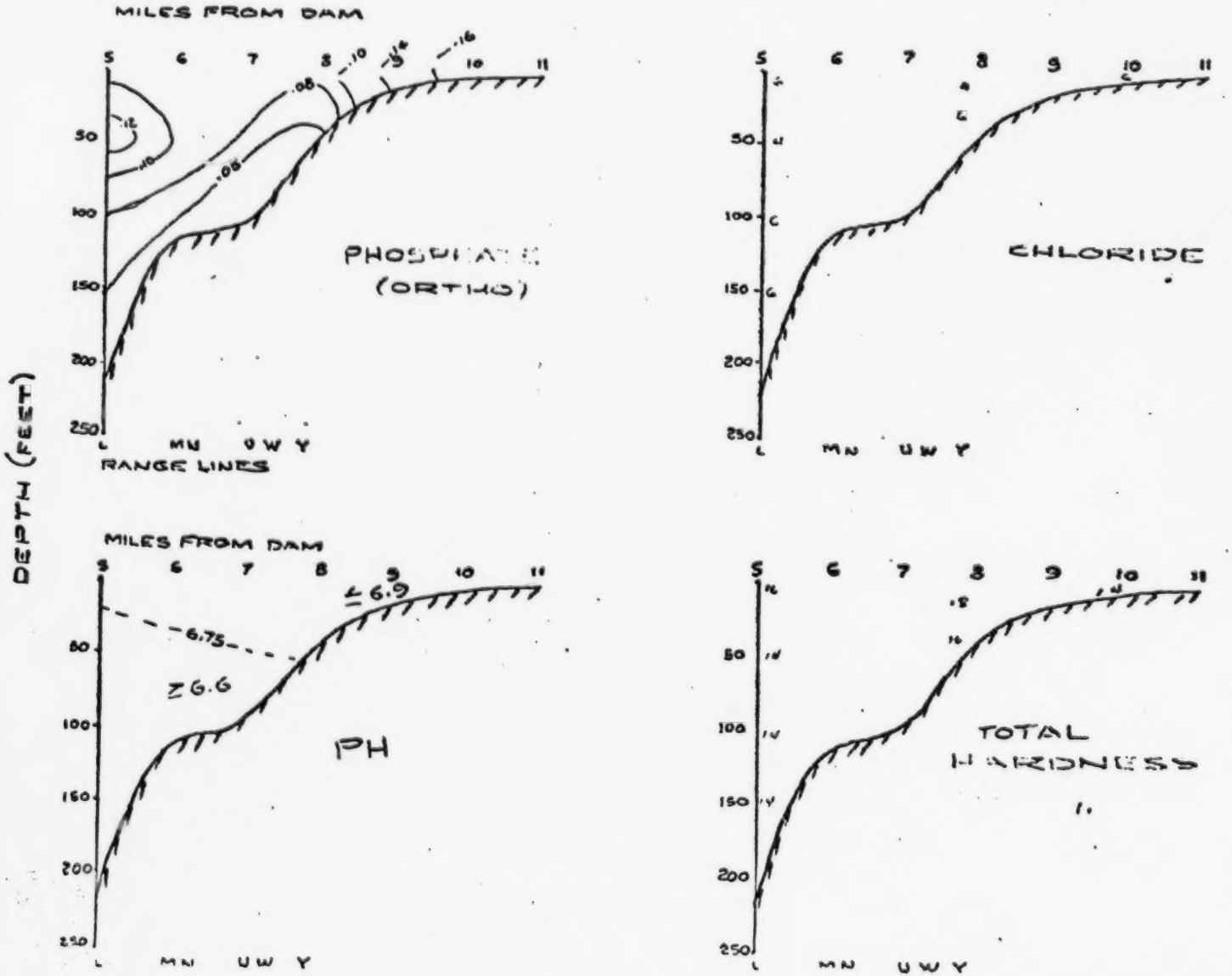
RES. MILES 5-11 (NORTH SANTIAM R. CHANNEL)



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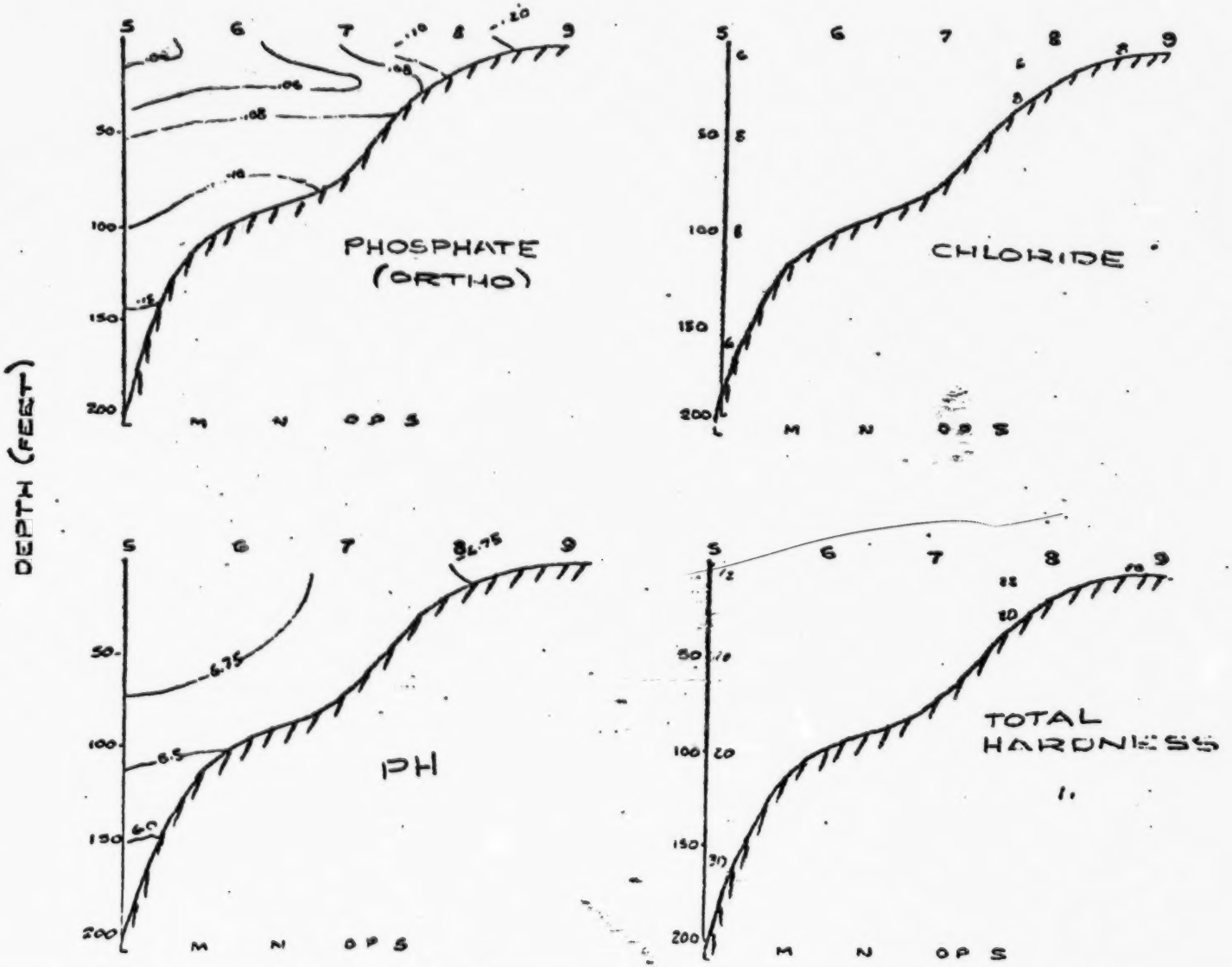
RES. MILES 5-9 (BREITENBUSH R. CHANNEL)



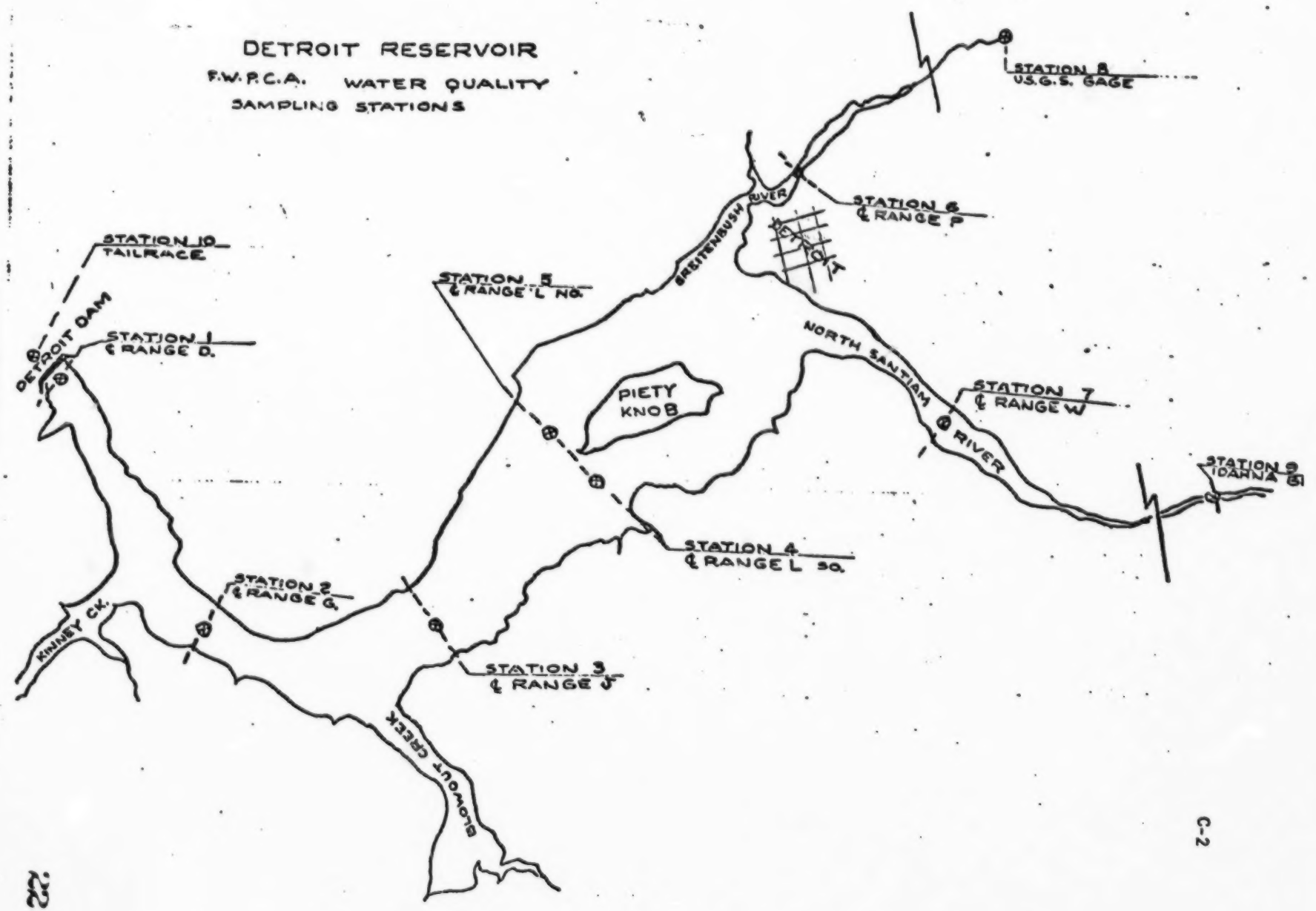
DETROIT RESERVOIR WATER QUALITY DATA REPORT
July 15-16, 1965

Columbia River Basin Comprehensive Project
for Water Supply and Pollution Control

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Federal Water Pollution Control Administration, Pacific Northwest

570 Pittock Block
Portland, Oregon 97205

August 1965


DETROIT RESERVOIR
F.W.P.C.A. WATER QUALITY
SAMPLING STATIONS
STATION 8
U.S.G.S. GAGE
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℄ RANGE P
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STATION 5
℄ RANGE L NO.
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NORTH SANTIAM RIVER
STATION 7
℄ RANGE W
STATION 9
IDAHNA 61
STATION 4
℄ RANGE L SO.
STATION 2
℄ RANGE Q
KINNEY CK.
STATION 3
℄ RANGE J
BLOWOUT CREEK

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TABULATED DATA
DETROIT RESERVOIR, OREGON
July 15-16, 1965

STATION 1. Log boom; Corps of Engineers Range D.
Time: 0715
Date: July 16, 1965
Weather: Clear
Wind: Calm

Depth ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.
0	63.0	27	9.20	100
40	61.1	26	9.68	97
90	53.1	22	9.60	93
140	49.3	20	10.28	95
240	44.6	19	10.56	99
340	43.3	18	10.05	85

STATION 2. Above Kinney Creek; Corps of Engineers Range G.
Time: 0750
Date: July 16, 1965
Weather: Clear
Wind: E-3

Depth ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	% Light Remain.	Depth ft.
0	64.9	29	9.04	100	100	0
50	57.9	25	9.29	96	63	2
100	51.8	22	9.80	94	42	4
150	47.6	21	10.45	95	29	6
250	44.6	20	10.25	88	23	8
					18	10
					14	12
					11	14
					8	16
					7	18

STATION 3. Above Blowout Creek; Corps of Engineers Range J.
Time: 0820 Weather: Clear
Date: July 16, 1965 Wind: Calm

Depth ft.	Temp. °F	Cond. umhδ/cm	D.O. mg/l	D.O. % Sat.	:	% Light Remain.	Depth ft.
0	68.2	31	8.80	101	:	100	0
50	56.8	25	9.18	93	:	63	2
100	51.8	23	9.88	93	:	45	4
150	48.0	22	10.29	94	:	34	6
250	43.5	20	10.11	86	:	25	8
					:	20	10
					:	16	12
					:	13	14
					:	10	16
					:	8	18
					:	6	20

STATION 4. South Channel off west end Piety Knob; Corps of Engineers Range L.
Time: 1340 Weather: Clear
Date: July 15, 1965 Wind: W-15

Depth ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	:	% Light Remain.	Depth ft.
0	69.8	34	9.10	106	:	70	2
25	65.8	32	9.10	102	:	63	4
50	57.9	30	9.10	92	:	50	6
100	53.1	26	9.70	94	:	43	8
150	47.7	23	9.80	97	:	35	10
					:	28	12
					:	25	14
					:	19	16
					:	15	18
					:	12	20

STATION 5. North Channel off west end Piety Knob; Corps of Engineers Range L.

Time: 1310 Weather: Clear
Date: July 15, 1965 Wind: Calm

Depth ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	% Light Remain.	Depth ft.
0	73.2	32	8.98	108	97	2
25	65.8	35	9.04	90	61	4
50	60.4	31	9.46	99	53	6
100	54.7	28	10.10	100	44	8
170	48.9	23	8.24	76	37	10
					29	12
					26	14
					18	16
					15	18
					12	20

STATION 6. Beginning of pool backup on Breitenbush River; Corps of Engineers Range P.

Time: 1240 Weather: Clear
Date: July 15, 1965 Wind: W-2

Depth ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	% Light Remain.	Depth ft.
0	73.0	33	8.34	101	52	2
50	56.3	31	9.72	97	43	4
					39	6
					30	8
					26	10
					21	12
					17	14
					10	16

STATION 7. Beginning of pool backup on North Santiam River; Corps of Engineers Range W.

Time: 1435
Date: July 15, 1965

Weather: Calm
Wind: W-10

Depth ft.	Temp. °F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	% Light Remain.	Depth ft.
0	73.0	35	9.46	115	67	2
50	57.9	34	9.00	93	62	4
					48	6
					38	8
					30	10
					25	12
					20	14
					16	16
					13	18
					10	20

STATION 8. U.S.G.S. Gaging Station; Breitenbush River.

Time: 1435
Date: July 15, 1965

Weather: Clear
Wind: W-10

Depth ft.	Temp. °F	D.O. mg/l	D.O. % Sat.
2	58.6	9.58	99

STATION 9. Idahna Bridge; North Santiam River

Time: 1625
Date: July 15, 1965

Weather: Clear
Wind: Calm

Depth ft.	Temp. °F	D.O. mg/l	D.O. % Sat.
2	61.7	9.40	100

STATION 10. Detroit Dam tailrace.
Time: 1020
Date: July 15, 1965

Weather: Clear
Wind: Calm

Depth ft.	Temp. °F	D.O. mg/l	D.O. % Sat.
2	47.3	10.24	92

NPD Form
July 1959 14

Hydrologic Data

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Project DEFICIT RESERVOIR

Comp.

Subject PT. SOUNDINGS 7/[illegible]/6[illegible]

Chkd.

Date:

		RANGE G	RANGE J	RANGE L EAST	RANGE L NORTH					
		7.16	7.16	7.15	7.15					
		1.9C	1.9C	1.9C	1.9C					
	"									
	65.2	65.2	66.4	70.C	67.2					
	65.C	65.C	66.4	67.C	65.C					
	63.4	63.4	64.C	64.C	63.2					
	61.C	61.C	61.C	61.8	61.8					
	57.C	58.2	58.2	58.C	57.4					
	54.4	57.8	57.4	57.C	56.8					
	50.C	50.2	51.2	50.8	50.C					
	47.2	47.8	48.8	47.8	47.6					
	53.4	53.8	53.2	53.8	52.6					
	51.2	51.4	52.2	52.8	51.8					
	49.4	50.8	51.C	51.8	50.8					
	49.C	49.2	50.C	50.2	49.C					
	48.C	48.C	49.4	49.4	48.8					
	47.8	47.2	47.8	48.C	47.C					
	47.C	46.2	47.2	47.C	47.C					
	47.2	46.C	46.4		46.2					
	45.4	44.8	45.C		45.C					
	44.4	44.2	45.C		17C' BOTTOM					
	43.C	43.C	44.2							
	42.8	42.2	42.8							
	43.C	43.C	43.2							
		39.C BOTTOM	41.C BOTTOM							
	42.4									
	42.2									
	42.1									
	42.1									
	39.C BOTTOM									

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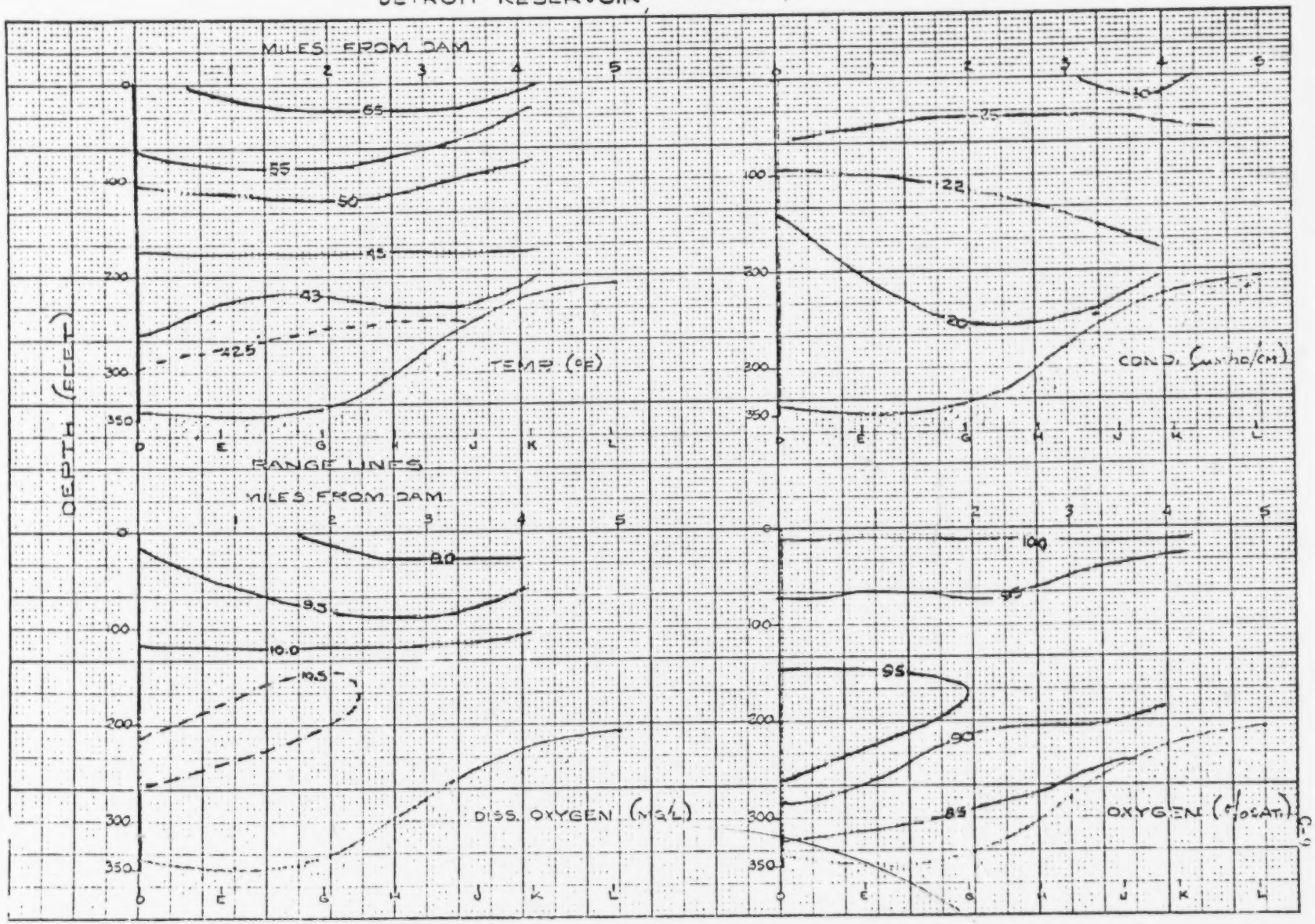
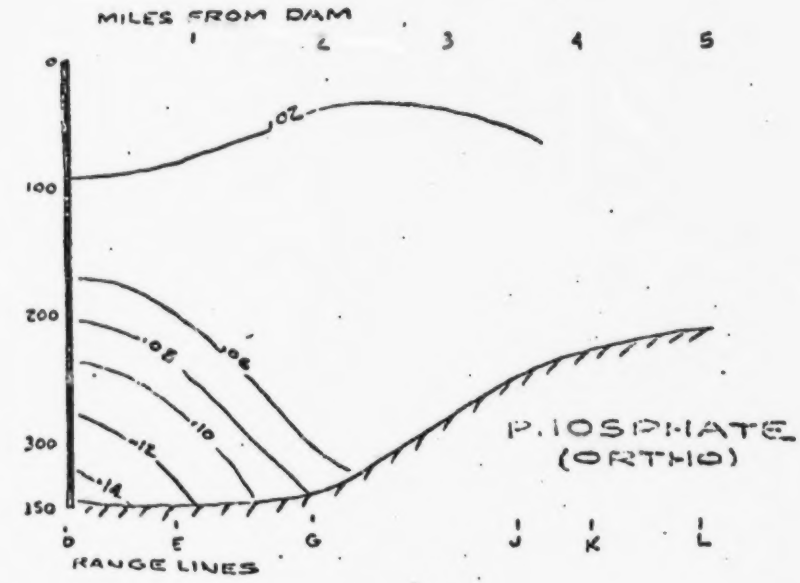
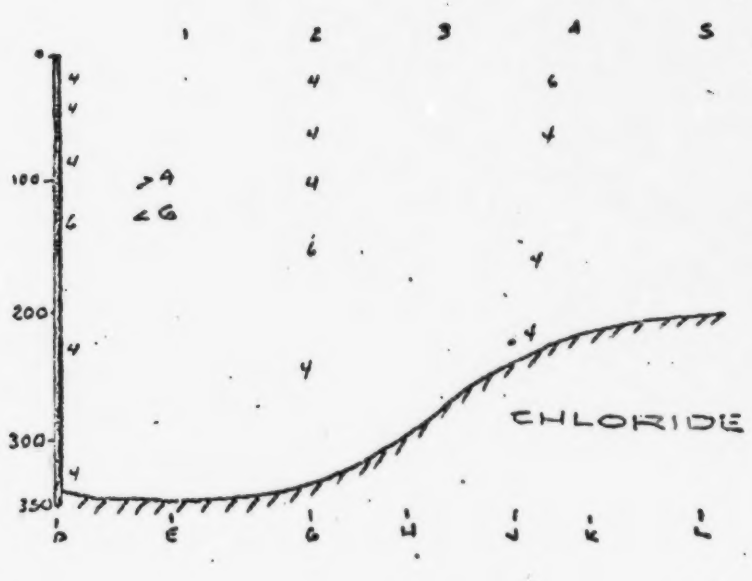
K+E 20 X 20 TO THE INCH 46 1242
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

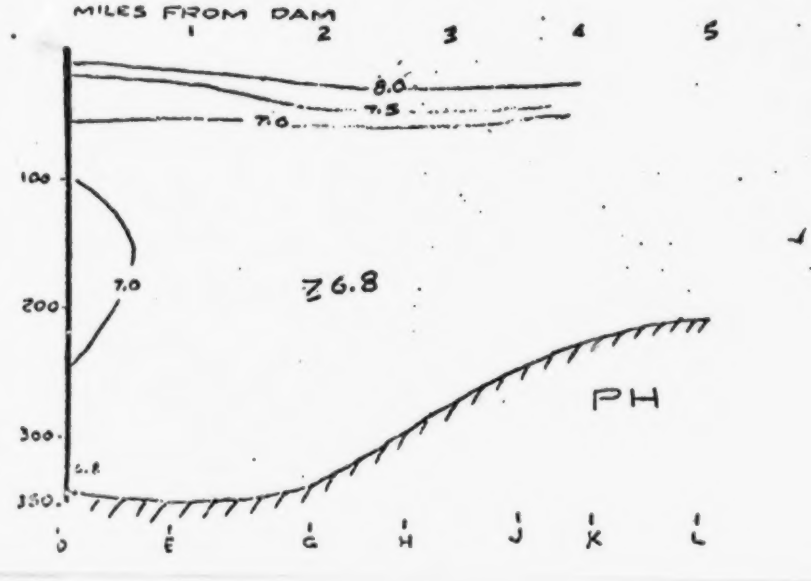
DETROIT RESERVOIR

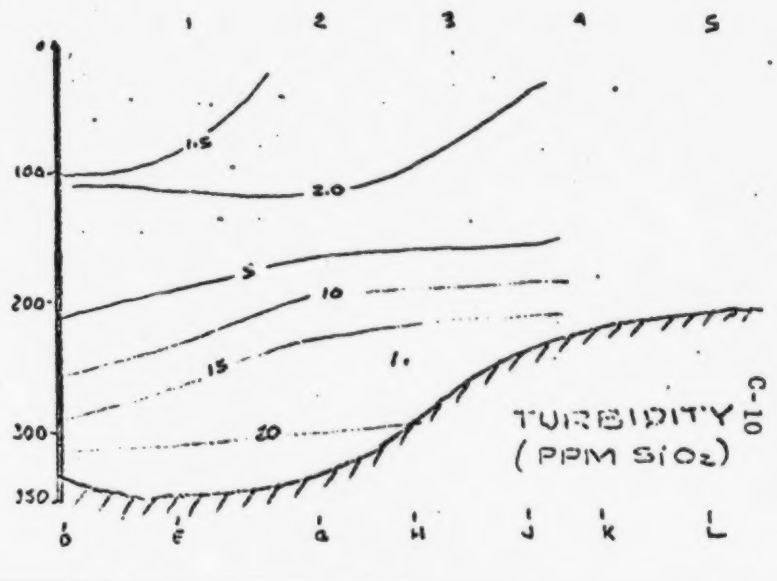


DETROIT RESERVOIR 7-16-65







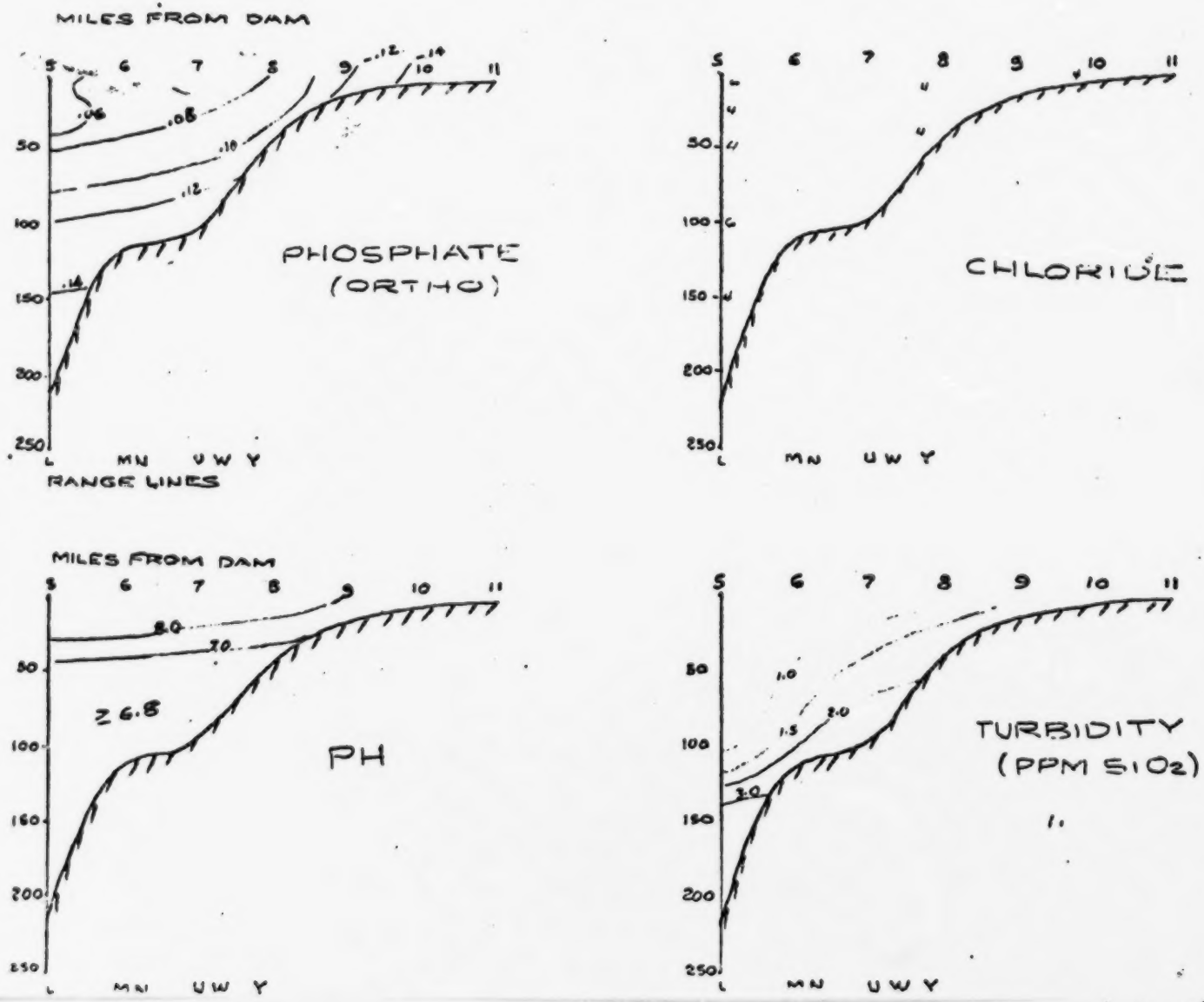


DEPTH (FEET)

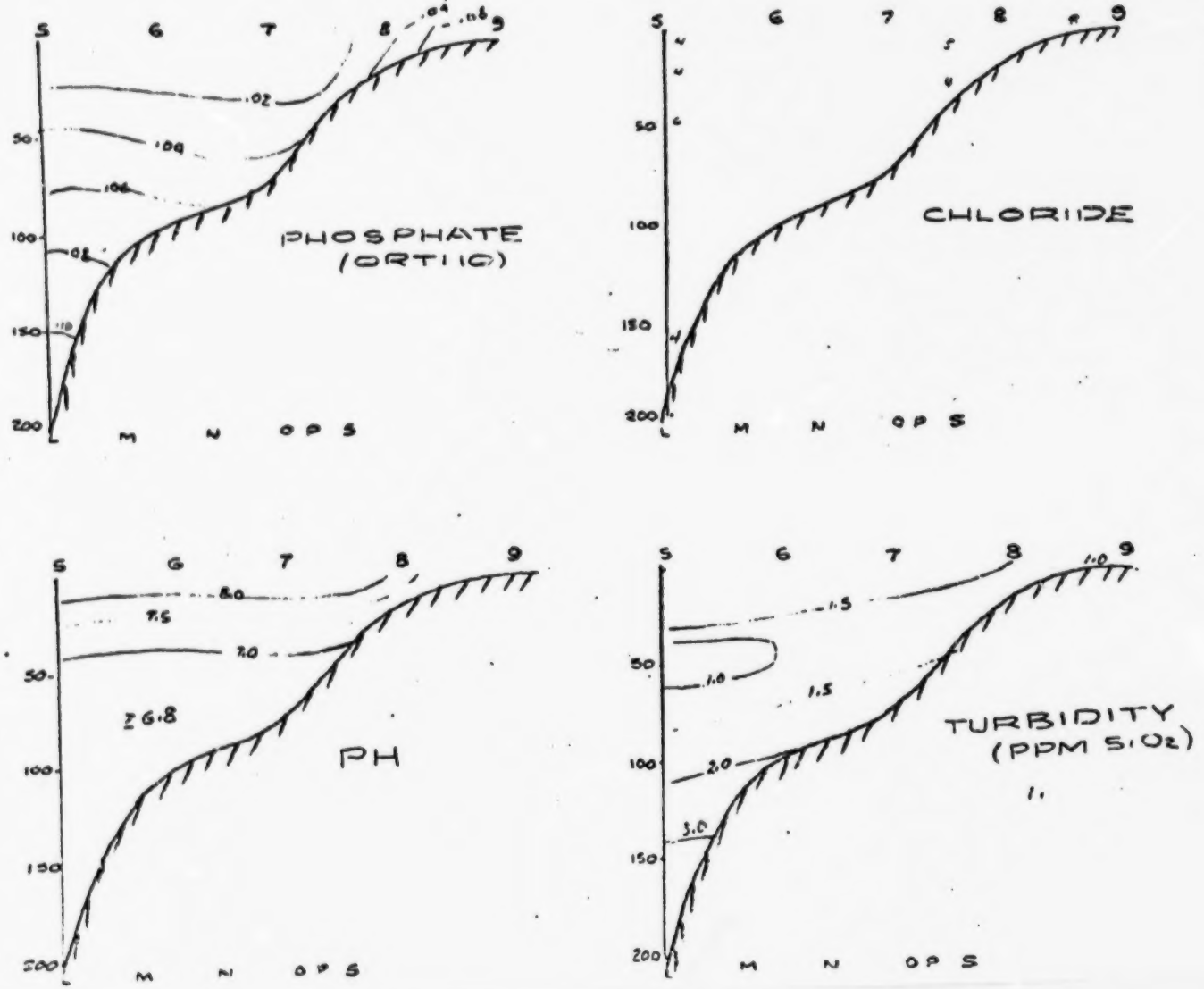
30

C-10

DETROIT RESERVOIR 7-16-65
RES. MILES 5-11 (NORTH SANTIAM R. CHANNEL)



DETROIT RESERVOIR 7-16-65
RES. MILES 5-9 (BREITENBUSH R. CHANNEL)



DETROIT RESERVOIR WATER QUALITY DATA REPORT
September 10-11, 1965

Columbia River Basin Comprehensive Project
for Water Supply and Pollution Control

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Federal Water Pollution Control Administration, Pacific Northwest

570 Pittock Block
Portland, Oregon 97205

November 1965

TABULATED DATA
DETROIT RESERVOIR, OREGON
September 10-11, 1965

STATION 1. Log boom; Corps of Engineers Range D.
Time: 0850 Weather: Clear
Date: September 11, 1965 Wind: 0

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho	% Light Remaining	Depth Ft.
0	63.1	29	8.64	95	0.15	0.08	67	2
50	62.6	28	8.50	92	0.03	0.03	60	4
100	56.1	24	8.48	85	0.07	0.06	53	6
200	45.9	20	9.36	82	0.10	0.05	45	8
300	45.0	20	9.64	85	0.12	0.06	43	10
315			9.08				32	14
							23	18
							14	22

STATION 2. Above Kinney Creek; Corps of Engineers Range G.
Time: 0925 Weather: Clear
Date: September 11, 1965 Wind: 0

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.
0	64.2	31	8.66	96
50	63.0	31	8.28	90
100	56.7	28	8.12	82
150	50.0	22	8.90	83
250	45.7	22	9.40	83

STATION 3. Above Blowout Creek; C of E Range J.
Time: 1410 Weather: Clear
Date: September 10, 1965 Wind: W-5

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.	% Light Remain.	Depth ft.
0	66.7	33	8.68	99	67	2
5	66.7	33			60	4
10	66.4	32			53	6
20	65.8	32			49	8
30	64.8	32			40	10
40	60.8	34			29	15
50	56.5	35	9.68	99	18	20
55	56.3	35			12	25

STATION 4. South Channel off West End Piety Knob; C of E Range L.
Time: 1330 Weather: Clear
Date: September 10, 1965 Wind: W-15

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.	% Light Remain.	Depth ft.
0	67.6	34	8.82	101	89	2
50	63.3	35	8.08	88	67	4
100	57.9	31	7.74	80	61	6
125	55.4	31	7.74	77	56	8
					50	10
					49	12
					38	16
					33	20
					27	24

STATION 5. North Channel off West End Piety Knob; C of E Range L.
Time: 1000 Weather: Clear
Date: September 11, 1965 Wind: 0

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho	% Light Remaining	Depth ft.
0	65.1	33	8.76	98	0.03	0.02	68	2
50	63.0	30	7.90	86	0.04	0.03	63	4
100	57.2	28	8.00	82	0.05	0.04	53	6
150	52.9	25	8.56	82	0.06	0.05	48	8
225	49.8	23	8.50	79	0.07	0.05	46	10
							24	20
							12	30
							6	40

STATION 6. Beginning of Pool Backup on Breitenbush River; CofE Range P.
Time: 1034 Weather: Clear
Date: September 10, 1965 Wind: 0

Depth ft.	Temp. °F	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho
0	51.4	9.04	86	0.1	0.07

STATION 7. Beginning of Pool Backup on No. Santiam River; CofE Range W.
Time: 1525 Weather: Clear
Date: September 10, 1965 Wind: 0

Depth ft.	Temp. °F	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho
0	54.5	10.56	104	0.10	0.03

STATION 8. U.S.G.S. Gage, two miles up Breitenbush River.
Time: 1300 Weather: Clear
Date: September 10, 1965 Wind: W-15

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.	% Light Remaining	Depth ft.
0	66.7	30	8.60	99	78	2
10	66.4	30			67	4
20	65.8	30			55	6
30	65.7	30			50	8
40	65.3	30			44	10
50	61.2	31	8.98	98	41	15
60	59.7	31			31	20
70	58.1	31			22	25

STATION 9. Idanha Bridge; Five miles up North Santiam River.
Time: 1350 Weather: Clear
Date: September 10, 1965 Wind: W-10

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.	% Light Remaining	Depth ft.
0	67.5	34	8.72	100	72	2
50	62.6	36	8.18	89	54	4
100	57.6	33	6.86?	70	54	6
150	52.5	28	8.10	77	50	8
					43	10
					32	15
					22	20
					17	25

STATION 10. Detroit Dam Tailrace.
Time: 1134
Date: September 10, 1965

Weather: Clear
Wind: W-5

Depth ft.	Temp. °C	DO mg/l	DO % Sat.	NO_3 mg/l	Phosphate	
					Total	Ortho
0	10.8	10.50	86	0.03	0.10	0.07

NPD Form 24
July 1'59

Hydrologic Data

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Project DETROIT RESERVOIR Comp.

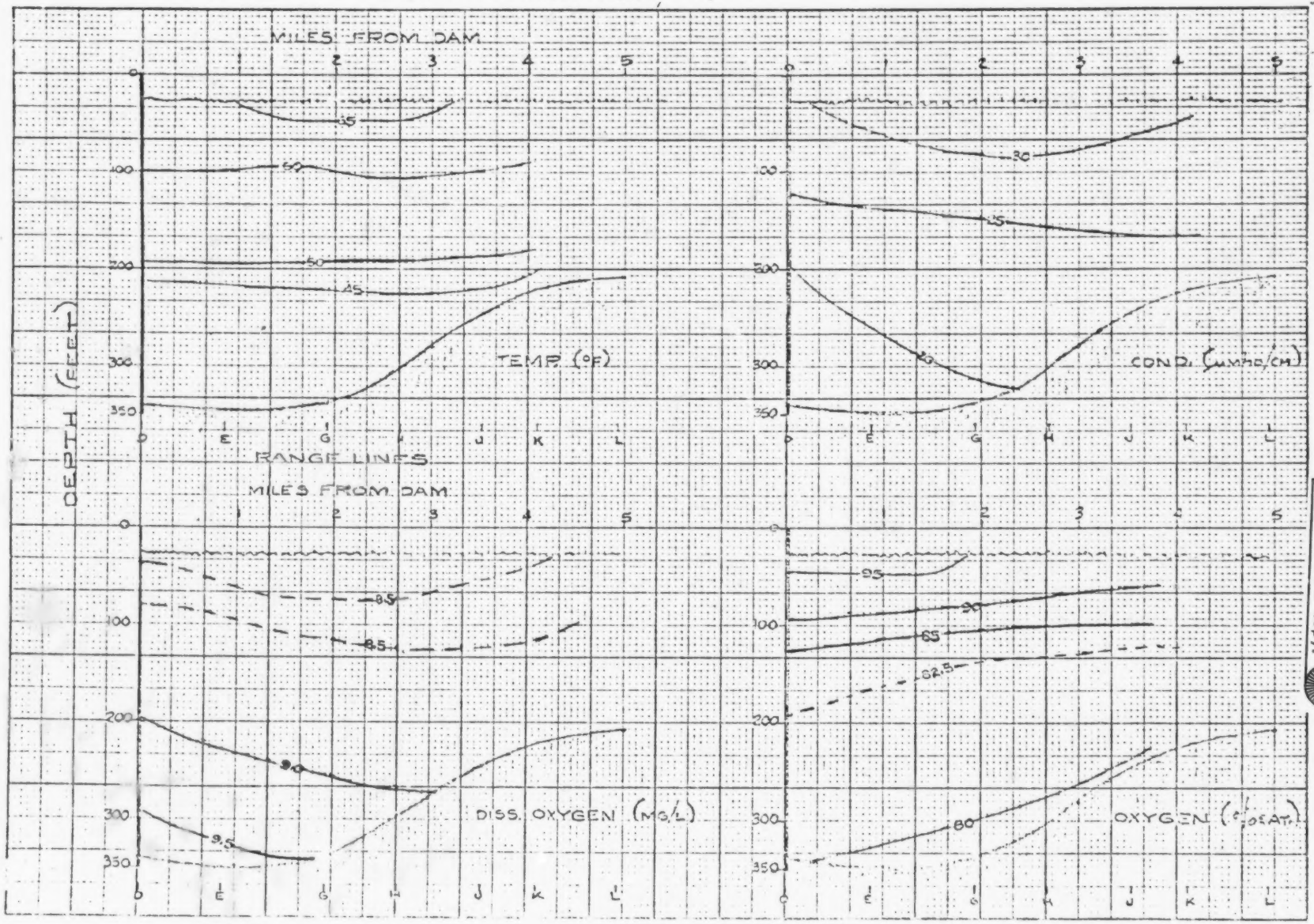
Suoject BT SOUNDINGS OF Chkd.

Date: 9/10-11/

LOCATION	LOG BOOM	RANGE G	RANGE J	RANGE L SOUTH	RANGE L NORTH	RANGE O	RANGE T
DATE	9-11-65	9-11-65	9-11-65	9-10-65	9-10-65	9-10-65	9-10-65
TIME	0950	1025	1100	1425	1450	1510	1335
DEPTH ↓	"						
0	63.8	65.0	64.8	66.0	66.0	66.0	66.1
10	63.8	65.0	64.6	66.0	65.8	65.8	65.8
20	63.8	65.0	64.5	65.6	65.4	65.4	65.5
30	63.8	64.9	64.3	65.4	65.0	64.2	65.4
40	63.7	64.8	64.0	64.2	64.0	60.8	64.9
50	63.4	63.8	61.4	62.0	61.4	56.8 BOTTOM 50'	61.4 BOTTOM 80'
60	62.5	61.5	59.8	60.0	59.6		
70	60.0	60.0	58.6	58.8	58.4		
80	58.6	59.4	57.8	57.8	57.9		
90	56.8	58.2	56.6	57.2	56.8		
100	55.4	57.2	55.9	56.0	56.0		
110	54.6	55.4	54.6	55.2	54.8		
120	53.6	54.6	54.0	53.8	53.8		
130	52.6	52.6	52.8	53.2	53.0		
140	51.0	51.8	52.2	BOTTOM 130'	52.0		
150	50.0	50.5	51.0		50.6		
160	47.8	48.3	49.2		49.2		
170	45.5	47.6	48.0		48.0		
180	44.8	46.6	46.8		BOTTOM 170'		
190	44.2	45.8	45.8				
200	43.9	45.0	45.0				
220	43.7	44.8	43.9 BOTTOM				
240	43.4	44.4	230'				
260	43.2	44.2					
280	43.1	44.1					
300	43.0	44.1 BOTTOM 310'					
320	42.9 BOTTOM 328'						

KEUFFEL & ESSER CO.

DETROIT RESERVOIR 9/10/55



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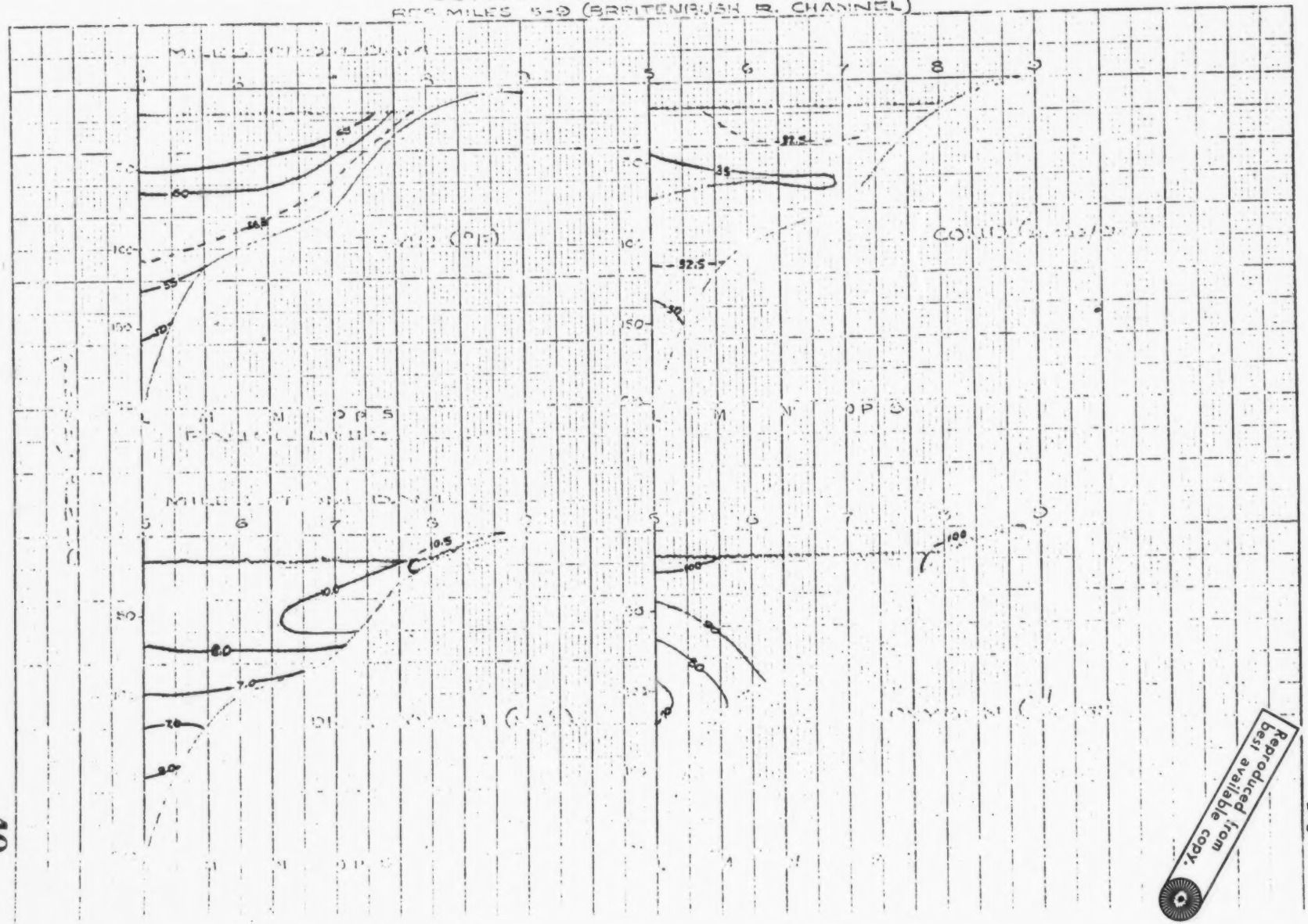
D-7

MEURFEL & ESSER CO.

DETROIT RESERVOIR 9/10-11/65

RES MILES 5-9 (BRITENBUSH R. CHANNEL)



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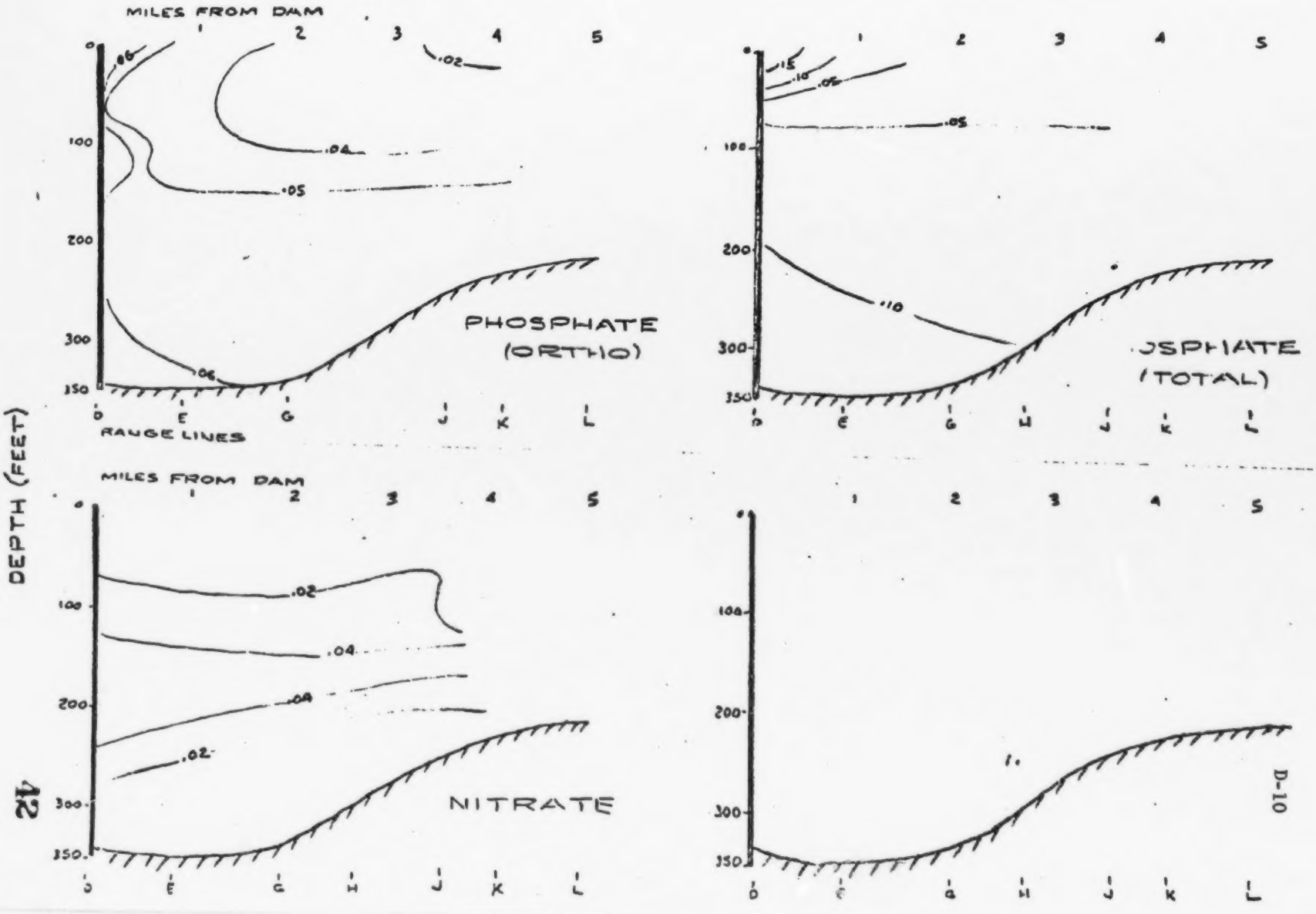
DETROIT RESERVOIR 9-10-6[illegible]



D-10

DETROIT RESERVOIR WATER QUALITY DATA REPORT

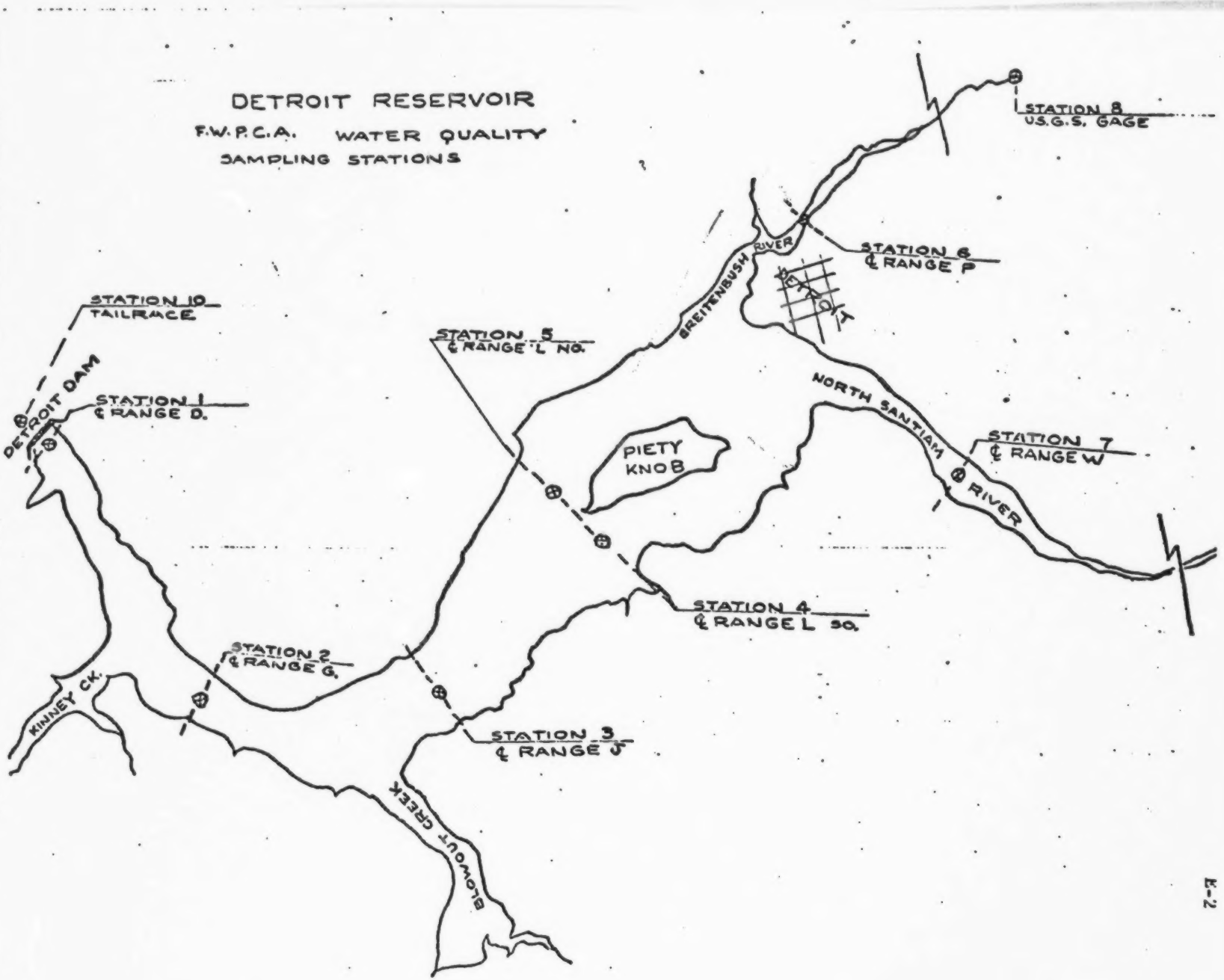
October 21, 1965

Columbia River Basin Comprehensive Project
for Water Supply and Pollution Control

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Federal Water Pollution Control Administration, Pacific Northwest

570 Pittock Block
Portland, Oregon 97205

November 1965


DETROIT RESERVOIR
F.W.P.C.A. WATER QUALITY
SAMPLING STATIONS
STATION 8
U.S.G.S. GAGE
STATION 6
℄ RANGE P
BREITENBUSH RIVER
DETROIT
STATION 10
TAILRACE
DETROIT DAM
STATION 5
℄ RANGE L NO.
STATION 1
℄ RANGE D.
PIETY KNOB
NORTH SANTIAM RIVER
STATION 7
℄ RANGE W
STATION 4
℄ RANGE L SO.
STATION 2
℄ RANGE G.
KINNEY CK.
STATION 3
℄ RANGE J
BLOWOUT CREEK

TABULATED DATA
DETROIT RESERVOIR, OREGON
October 21, 1965

STATION 1. Log boom; Corps of Engineers Range D
Time: 1340
Date: October 21, 1965

Weather: Clear
Wind: E-15

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
0	59.5	42.2	9.12	96	5.30	0.01	0.01	0.04
25	58.6	40.4	9.30	97	5.35	0.01	0.01	0.03
50	58.5	42.4	9.30	97	5.30	0.01	0.01	0.02
100	57.2	43.0	8.38	86	5.75	0.01	0.01	0.05
200	45.3	34.9	8.82	77	6.45	0.02	0.02	0.10
275	44.8	37.2	8.88	77	5.40	0.03	0.03	0.14

STATION 2. Above Kinney Creek; Corps of Engineers Range G
Time: 1415
Date: October 21, 1965

Weather: Clear
Wind: Calm

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
0	59.5		9.40	99				
50	58.1		9.20	95				
100	56.7		8.50	86				
200	45.1		8.80	77				
250	44.6		8.50	74				

STATION 3. Above Blowout Creek; Corps of Engineers Range J
Time: 1445 Weather: Clear
Date: October 21, 1965 Wind: Calm

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
0	60.4	41.5	9.30	99	5.50	0.01	0.01	0.03
50	58.6	40.2	9.20	95	6.60	0.01	0.01	0.03
100	56.7	44.3	8.86	89	5.80	0.01	0.02	0.06
150	51.4	38.3	6.80	65	6.70	0.03	0.03	0.07
200	45.7	37.1	8.10	71	5.70	0.05	0.03	0.10

STATION 4. South Channel off West End Piety Knob; C of E Range L
Time: 1500 Weather: Clear
Date: October 21, 1965 Wind: E-2

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
0	59.9		9.30	98				
50	58.1		9.10	94				
100	54.7		8.88	90				

STATION 5. North Channel off West End Piety Knob; C of E Range L
Time: 1540 Weather: Clear
Date: October 21, 1965 Wind: Calm

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
0	60.4		9.10	97				
50	58.6		9.28	96				
100	56.8		9.36	95				
125	55.9		9.76	98				

STATION 6. Beginning of Pool backup on Breitenbush River; C of E Range P
Time: 1600 Weather: Clear
Date: October 21, 1965 Wind: Calm

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
2	59.4		9.58	100				

STATION 7. Beginning of Pool backup on North Santiam River; C of E Range W
Time: 1520
Date: October 21, 1965
Weather: Clear
Calm: Calm

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
2	47.8		11.46	104				

STATION 8. U.S.G.S. Gage; 2 Miles up Breitenbush River
Time: 1140
Date: October 21, 1965
Weather: Clear
Wind: Calm

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
2	45.7	57.5	11.96	105	6.00	0.01	0.01	0.06

STATION 9. Idahna Bridge; 5 miles up North Santiam River
Time: 1120
Date: October 21, 1965

Weather: Clear
Wind: Calm

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
2	46.8		11.88	107				

STATION 10. Detroit Dam Tailrace
Time: 1030
Date: October 21, 1965

Weather: Misty
Wind: E-25

Depth Ft.	Temp. F	Cond. umho/cm	D.O. mg/l	D.O. % Sat.	pH	Nitrates	Phosphate Ortho	Phosphate Total
2	55.4	10.7	8.80	88	6.35	0.01	0.01	0.02

NPD Form
July 1959 14

Hydrologic Data

E-8 Page ____

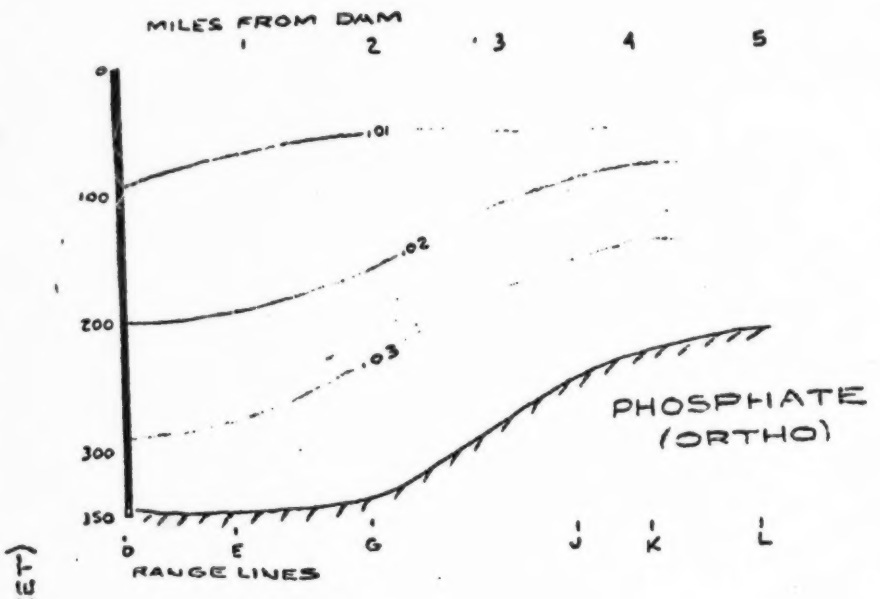
Project DETROIT RESERVOIR Comp. ____

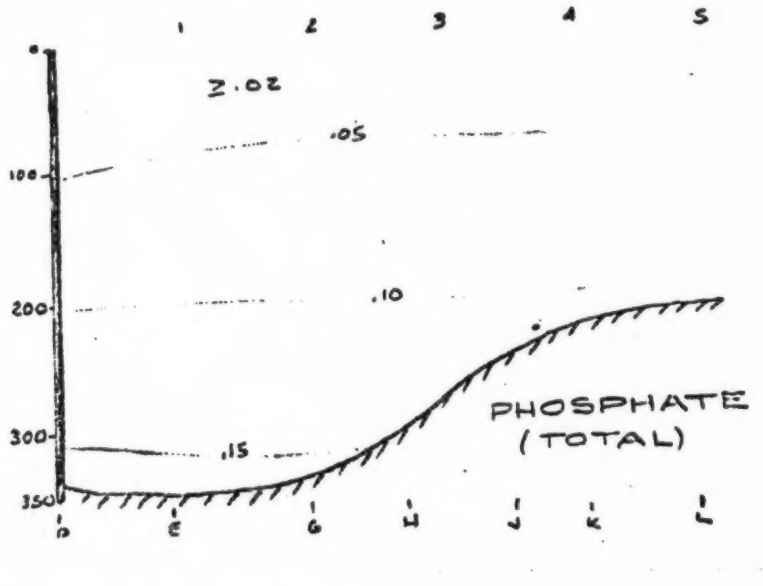
Subject BT SOUNDINGS °F 10-21-65 Chkd. ____

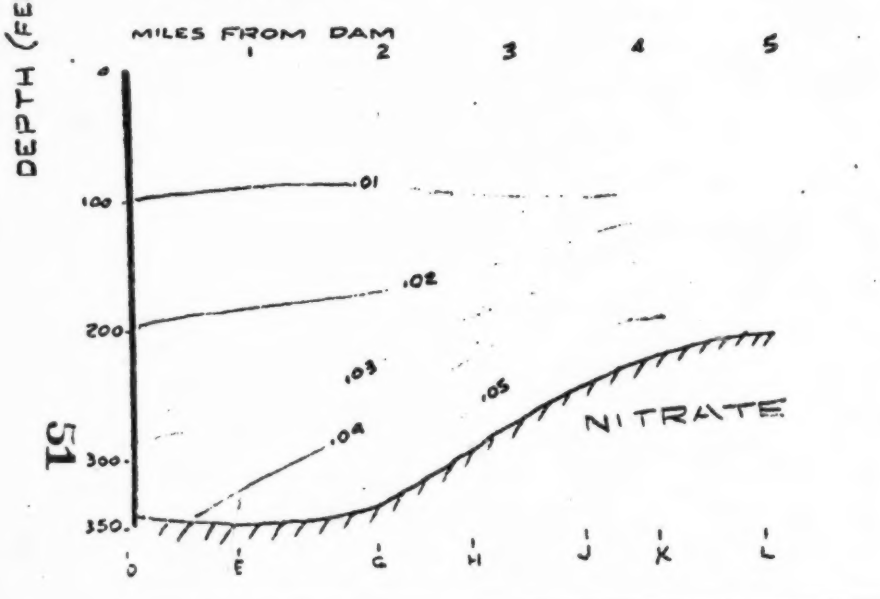
Date: ____

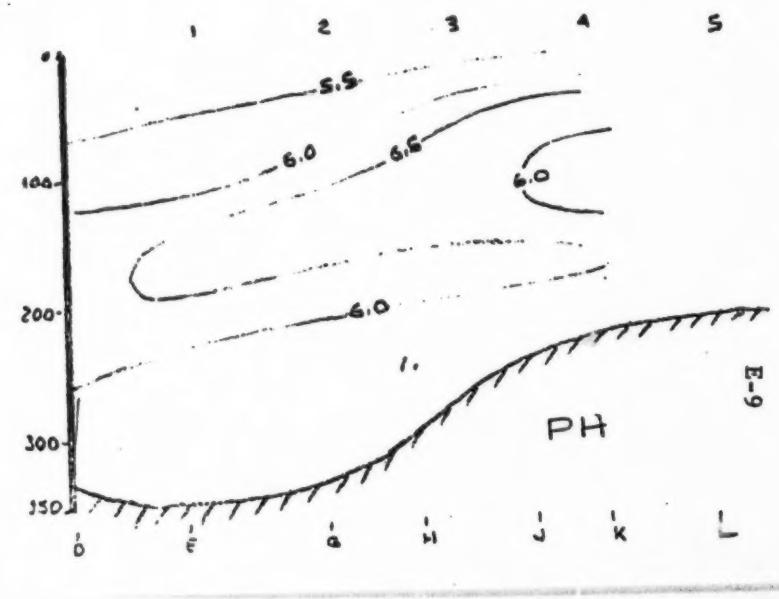
LOCATION	#1 LOG BOOM	#2 RANGE G	#3 RANGE J	#4 RANGE L-50.	#5 RANGE L-NO.
DATE	10-21-65	10-21-65	10-21-65	10-21-65	10-21-65
TIME	1330	1415	1440	1500	1540
DEPTH ↓	"				
0	58.2	58.0	59.0	58.3	58.2
10	58.2	58.0	59.0	58.2	58.2
20	58.1	58.0	59.0	58.2	58.1
30	58.0	57.9	58.9	58.1	58.1
40	58.0	57.9	58.9	58.1	58.0
50	58.0	57.9	58.9	57.9	57.8
60'	57.9	57.9	58.4	57.2	57.2
70	57.8	57.7	57.8	57.0	57.0
80'	57.7	57.0	57.4	56.6	56.5
90	57.6	56.4	57.1	56.2	56.2
100	56.2	56.0	56.9	56.1	56.0
110	55.6	55.8	56.6	BOTTOM 100'	55.7
120	55.0	55.4	56.2		55.2
130	54.2	54.6	55.5		BOTTOM 125'
140	50.0	51.0	52.6		
150	46.6	47.0	48.2		
160	45.0	45.0	46.4		
180	44.2	44.2	45.2		
200	44.0	44.0	45.0		
220	43.8	43.8	BOTTOM 200'		
240	43.8	43.8			
260	43.6	BOTTOM 245'			
280	43.5				
300	BOTTOM 294'				

DETROIT RESERVOIR 10-21-65









DEPTH (FEET)

E-6

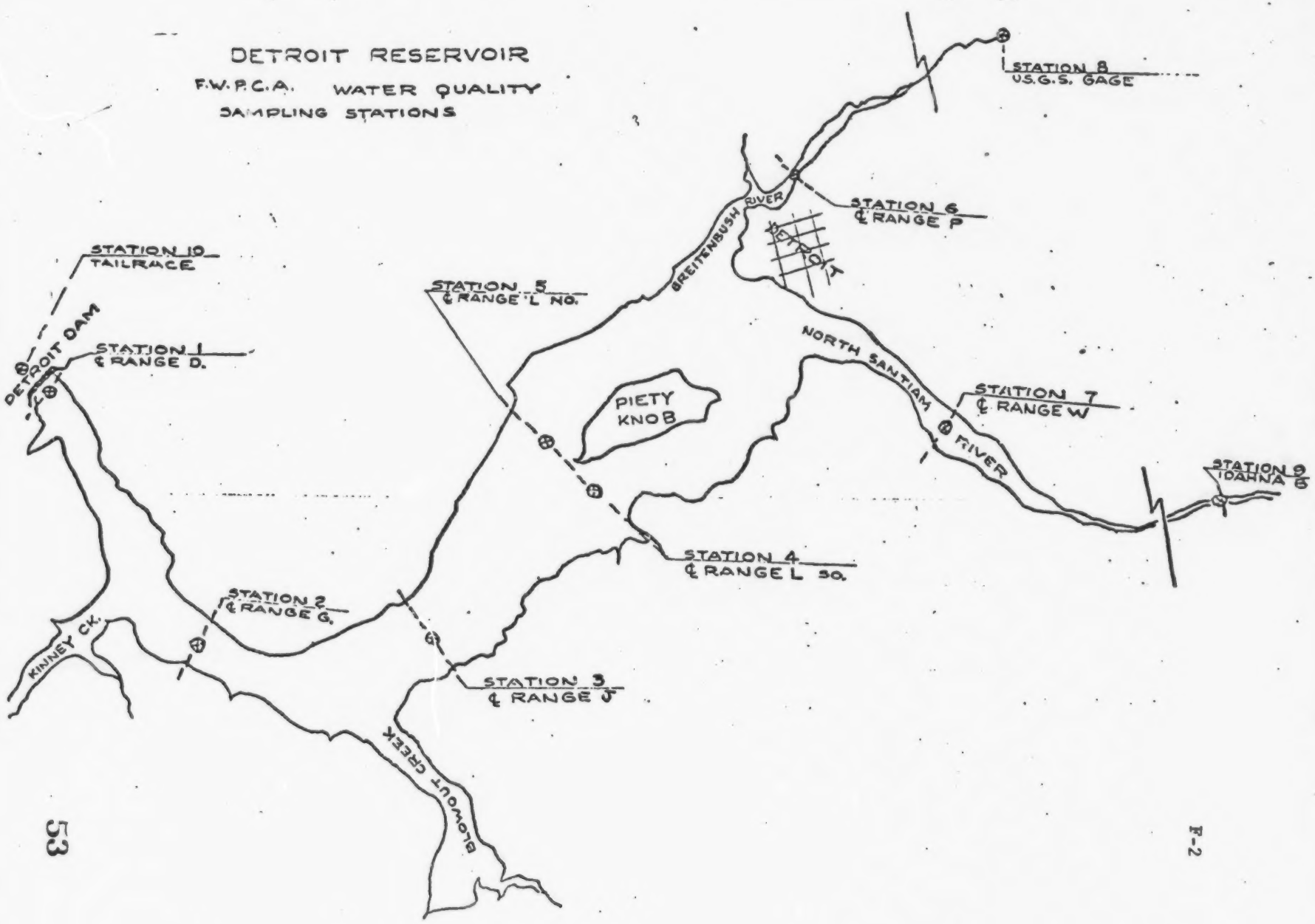
DETROIT RESERVOIR WATER QUALITY DATA REPORT

December 2, 1965

COLUMBIA RIVER BASIN COMPREHENSIVE PROJECT
FOR WATER SUPPLY AND POLLUTION CONTROL

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Federal Water Pollution Control Administration,
Pacific Northwest

January 1966


DETROIT RESERVOIR
F.W.P.C.A. WATER QUALITY
SAMPLING STATIONS
STATION 8
U.S.G.S. GAGE
STATION 6
℄ RANGE P
BREITENBUSH RIVER
DETROIT
STATION 10
TAILRACE
DETROIT DAM
STATION 1
℄ RANGE D.
STATION 5
℄ RANGE L NO.
PIETY KNOB
NORTH SANTIAM RIVER
STATION 7
℄ RANGE W
STATION 9
IDAHNA
STATION 4
℄ RANGE L SO.
STATION 2
℄ RANGE G.
KINNEY CK.
STATION 3
℄ RANGE J
BLOWOUT CREEK

TABULATED DATA
DETROIT RESERVOIR, OREGON

December 2, 1965

Station: 8. USGS Gage, 2 miles up Breitenbush River.
Time: 1120 Weather: Overcast
Date: December 2, 1965 Wind: Calm

Depth ft.	Temp. °F	D.O. mg/l	D.O. % Sat.	Nitrate	Phosphate Total	Phosphate Ortho
Surf.	41.5	12.5	105	0.03	0.33	0.05

Station: 9. Idanha Bridge: 5 miles up North Santiam River.
Time: 1055 Weather: Overcast
Date: December 2, 1965 Wind: Calm

Depth ft.	Temp. °F	D.O. mg/l	D.O. % Sat.	Nitrate	Phosphate Total	Phosphate Ortho
Surf.	42.3	13.2	111	0.03	0.13	0.08

Station: 10. Detroit Dam Tailrace.
Time: 1010 Weather: Overcast
Date: December 2, 1965 Wind: Calm

Depth ft.	Temp. °F	D.O. mg/l	D.O. % Sat.	Nitrate	Phosphate Total	Phosphate Ortho
Surf.	47.7	9.5	87	0.10	0.05	0.02

NPD Form
July 195? 14

Hydrologic Data

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Project DETROIT RESERVOIR Comp.

Subject BT SOUNDINGS 12-2-65 Chkd.

°F Date:

LOCATION	DAM FACE
DATE	12-2-65
TIME	1250
DEPTH ↓	
0	48.2
10	"
20	"
30	"
40	"
50	"
60	"
70	↓
80	47.0
90	46.2
100	46.1
110	45.8
120	45.2
130	44.6
140	44.2
150	44.1
160	44.0
170	44.0
180	43.9
190	43.8
200	43.7
210	BOTTOM 208'